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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,879	02/22/2002	Jean-Luc Truche	10020005-1	9366

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EXAMINER
SOUW, BERNARD E

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/080,879	TRUCHE ET AL.	
	Examiner	Art Unit	
	Bernard E Souw	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-54* is/are rejected.

7)☒ Claim(s) *1, 11, 36-50 and 52-54* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because of many informalities which do not conform to the usual terminologies conventionally accepted in the pertinent art.

Examples of such terminologies are:

The word "*ion enhancement*" is unusual for being technically non-descriptive: An ion cannot be enhanced (but its *number* or *intensity* can). The Examiner suggests to substitute Applicant's terminology with "*ion source performance enhancement (system)*", which is technically descriptive and also commensurate with Danell et al., i.e., Applicant's own Prior Art as listed in the Information Disclosure Statement filed 02/22/2002.

- In lines 2-3, the recited *"(system) used to direct a heated gas toward ions produced by ...*" is misleading, because the heated gas remains fully separated from the ions all the time. Correct would be "*(system) used to direct a heated (hot) gas [~~toward~~]* ***to heat the*** *ions produced by ...*".

In lines 5-6, regarding the recited "*increased number of ions more* ***easily detected*** *by a detector*", the word "***easily***" has no technical meaning, and the whole phrase is based on an incorrect omission of the important role of a mass spectrometer or analyzer prior to ion detection.

The Examiner suggests to replace the last two lines of the Abstract with "... *analyte ions from a matrix-based ion-source, enhancing* ***th number*** *or* ***intensity of*** *the analyte*

ions with an ion ***source performance*** *enhancement system,* ***analyzing the ions by a mass spectrometer,*** *and detecting the* ***analyzed*** *ions with a detector.*"

Appropriate corrections are required. See MPEP § 608.01(b).

2. On pg.10/line 12, Applicant's claim that Fig.7 belongs to the first embodiment of Applicant's invention, is in direct contradiction to Applicant's label of Prior Art on Fig.7, and also Applicant's statement made on pg.11/line 15, reciting that Fig.7 is copied from a Prior Art.

3. On pg.10/ll.30-31, the specification recites in reference to Fig.7, "*.... as opposed to out of the housing 35, as is accomplished with prior art devices*", and further on pg.11/ll.21-22, "*The gas is released into the ionization chamber and serves no purpose ...*". Since there is indeed *no purpose* whatsoever to release the gas into the ionization chamber, Applicant's claim of such a purpose-less "Prior Art" must be given the benefit of a doubt.

Reciting a non-existent Prior Art to enhance the importance of one's own invention would not be a proper public disclosure. To clarify this issue the Applicant is obligated to specifically disclose the relevant Prior Art cited in the disclosure, which is also copied in Fig.7. Applicant's duty to disclose any Prior Art is comprised in the Oath and Declaration under CFR 37, section 1.56a.

4. On pg.12/ll.6-8 the specification recites, "... *(analyte ions are) carried to the main capillary 18 and then sent to the detector 11*", which is objected to by the Examiner because it does not include one main and important step, i.e., analyzing the ions using a mass analyzer or spectrometer, which was recited in all Applicant's cited Prior Arts; Danell et al. and Laiko et al. To demonstrate Applicant's failure to include this important part, see the attached brochure on Agilent Mass Spectrometer downloaded from the Website (see PTO-892), which shows on pg.2 a schematics of Agilent 1100, comprising an Ion Trap Mass Spectrometer and a detector as two distinctively different devices.

See also the other brochure on *5902 Magnum Electron Multiplier*, which is unambiguously identified as an ion detector for use with mass spectrometers or mass analyzers, but to be distinguished from the mass spectrometer or analyzer itself. From these two brochures it is thus obvious that sending analyte ions from a capillary to a detector without passing through a mass analyzer, as recited by Applicant, does not bring the results as claimed.

5. On pg.12/line 9, the recitation, "*This result is quite unexpected*" is objected to by the Examiner, because it contradicts Applicant's own prior Art, Danell et al. (see IDS), which *already* ***expected***, or even ***anticipated*** such a result, as recited in section *Results*, lines 10-11, while contradicting Applicant's specification by further declaring that the applied heat is "*declustering, (or desolvating, in reference to using an ESI ion source, as recited in Methods and Instrumentation, lines 5-6) the species, so that they*

are much more easily transmitted to the vacuum system of the mass spectrometer" (section *Results*, lines 4-5 from bottom).

6. Note also, Danell et al. never used the technically non-descriptive word "*easily detected*" as used by Applicant, while also reciting the correct step of *transmitting the ions to a mass spectrometer*, which is one of the most important key steps completely "forgotten", or ignored, by the Applicant in the entire disclosure, as already objected previously (see the attached brochure on Agilent Mass Spectrometer downloaded from the Website (see PTO-892), which shows on pg.2 a schematics of Agilent 1100, comprising an Ion Trap Mass Spectrometer and a detector as two distinctively different devices).

7. On pg.12/line 10, the disclosure recites, "*no solvent is used with AP-MALDI and MALDI ion sources*". However, a matrix is still being used, such that Applicant's result as shown in Fig.10 is again to be given the benefit of the doubt, i.e., whether the apparent enhancement of ion intensities between m/z≈700 to m/z≈2000 observed by Applicant were not just showing broken-down matrix ions. This is to be differentiated from Applicant's Prior Art, Danell et al., in which the same possibility has been excluded after proper examination, as recited in section *Results*, lines 8-9 from bottom, such that no similar objection can thereby be raised. An affidavit is needed to remove the doubt, or least the specification is to be modified to include this perspective.

8. On pg.12/lines 11-12, the recitation, "... *desolvation and/or application of a gas would not be expected to be effective in enhancing ion detection in matrix based ion sources and mass spectrometers*" contains several errors to be objected to. Apart from the improper use of the word "*enhancing*", the word "*desolvation*" is not to be compared to "*application of a gas*", since the two are of completely different natures, and hence, not comparable by "*and/or*". Furthermore, the word "*application of a gas*" is misleading, because what really meant by Applicant is *heating the ions*.

9. On pg.12/line 14, the words "*easily detectable*" is technically non-descriptive, since it is unclear what is meant by "*easy*". As known to one ordinarily skilled in the art, detecting analyte ions with Applicant's performance enhancement system is technically as easy as detecting analyte ions without such a system, meaning that no additional device and/or effort is required. As known to one ordinarily skilled in the art, it is not a matter of detection which makes the difference, but a matter of mass-analysis performed by a mass analyzer or spectrometer, which is here ignored and/or omitted by the Applicant.

10. On pg.12/line 15, the recited "*the application of heat also **helps with sample evaporation***" must again be given the benefit of a doubt, because it is technically incomprehensible for one of ordinary skill in the art, how a low temperature of only about 60-150 ^{0}C, as used in Applicant's invention, would be able to compete with the immense heat, i.e., temperature, generated by a focused laser beam in a laser

desorption process. A comparison of Applicant's 60-150 ^{0}C gas temperature with the evaporation or sublimation temperature of the matrix, and further, with the temperature generated in the laser desorption process is required in order to remove the doubt. Otherwise, the relevant statement has to be eliminated from the disclosure.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 11, 39 and 52 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A mass spectrometer or mass analyzer placed between the collecting capillary and the detector, which is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). To demonstrate Applicant's failure to include this important part, see the attached brochure on Agilent Mass Spectrometer downloaded from the Website (see PTO-892), which shows on pg.2 a schematics of Agilent 1100, comprising an Ion Trap Mass Spectrometer and a detector as two distinctively different devices. See also the other brochure on *5902 Magnum Electron Multiplier*, there unambiguously identified as an ion detector for use with a mass spectrometer/analyzer, however, to be distinguished from the mass spectrometer/analyzer itself.

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 11, 36-39, 41-45, 47, 49-50, and 52-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is meant by the word "*ion enhancement*". In particular, what is thereby enhanced, the size of the ions, the mass of the ions, the number of species, the number of ion counts or ion intensities, or something else?

14. Claims 11, 38, 39, 47 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is meant by the word "*ease of detection*". As known to one ordinarily skilled in the art, detecting analyte ions with or without Applicant's performance enhancement system technically involves the same difficulty level, meaning that no further/additional device and/or effort is required by either one as compared to the other. As known to one ordinarily skilled in the art, it is not a matter of detection which makes the difference, but a matter of mass-analysis performed by a mass analyzer or spectrometer, which is here ignored and/or omitted by the Applicant.

15. Claims 11 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A mass spectrometer does not produce analyte ions, but is supposed to merely analyze their masses. It is the ion source that produces the analyte ions. See the attached brochure on Agilent Mass Spectrometer downloaded from the Website (see PTO-892), which shows on pg.2 a schematics of Agilent 1100, comprising an Ion Trap Mass Spectrometer and an Ion Source, clearly showing two distinctively different devices.

16. Claims 1, 11 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 11 and 52 recite the limitation of "*producing analyte ions in a matrix-based ion source and discharging said ions into an ionization region.*" If the product "*analyte ions*" are already in the form of ions, they do not need to be "*discharged **to** an ionization region*", because the specific purpose of an ionization region is to ionize neutral atoms. or molecules. Appropriate correction is required.

In order to proceed with this Office Action, the limitation is changed by the Examiner into "*producing analyte ions ~~[in]~~ **by** a matrix-based ion source ~~[and discharging]~~ ~~[to]~~ **in** an ionization region*".

17. Claims 11, 39 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships is a mass spectrometer or mass analyzer that needs to be placed between the collecting capillary and the detector, which is critical or essential to the practice of the invention, but not included in the claim(s), and also not enabled by the disclosure (see above Objections to the Specification). As proof for Applicant's failure to include this important part, see the attached brochure on Agilent Mass Spectrometer downloaded from the Website (see PTO-892), which shows on pg.2 a schematics of Agilent 1100, comprising an Ion Trap Mass Spectrometer and a detector as two distinctively different devices.

See also the other brochure on *5902 Magnum Electron Multiplier*, there unambiguously identified as an ion detector for use with a mass spectrometer or analyzer, however, to be distinguished from the mass spectrometer or analyzer itself. From the two brochures it is thus obvious that sending analyte ions from a capillary to a detector without passing through a mass analyzer, as recited by Applicant, does not bring the claimed results.

18. While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "*detector*" in claims 40 and 48 is used by the claim to mean "*mass analyzer*" or "*mass spectrometer*", while the accepted

meaning is "*(ion) detector.*" In short, although a mass analyzer/spectrometer may comprise an ion detector, an ion detector is not necessarily connected to a mass analyzer/spectrometer. Not only are they of technically very different natures, but they also are supposed to perform completely different functions. Therefore, the two should not be confused one with the other.

As proof for Applicant's failure to distinguish between detector and mass analyzer/spectrometer, please refer to the attached brochure on Agilent Mass Spectrometer downloaded from the Website (see PTO-892), which shows on pg.2 a schematics of Agilent 1100, comprising an Ion Trap Mass Spectrometer and a detector as two distinctively different devices. See also the other brochure on *5902 Magnum Electron Multiplier*, there unambiguously identified as an ion detector for use with a mass spectrometer or analyzer, however, to be distinguished from the mass spectrometer or analyzer itself. From these two brochures it is thus obvious that sending analyte ions from a capillary to a detector without passing through a mass analyzer, as recited by Applicant, does not bring the claimed results.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. Insofar as the examiner can ascertain beyond the previous § 112 rejections, claims 1, 11, 22, 26, 36-39 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danell et al. (IDS) in view of Laiko et al. (IDS), hereafter denoted as Laiko-I (Anal. Chem. 2000, Vol. 72, pp.652 ff.) and Laiko-II (Anal. Chem. 2000, Vol. 72, pp.5239 ff.), and further in view of Wilson Jr. (USPAT # 5,022,379) and Boswell et al. (USPAT # 4,098,589).

21. Regarding claim 11, Danell et al. disclose a performance enhanced ion source used with a mass spectrometer, as disclosed in the first line of section *Method and Instrumentation*, the apparatus comprising:

(a) a matrix based ion source for producing ~~*[and discharging]*~~ analyte ions ~~*[to]*~~ ***in*** an ionization region, as inherent in Danell's and more specifically recited by Laiko-I, as shown by 3/4/5 in Fig.1 and recited on pg.653/Col.1;

(b) a collecting capillary 2, shown in Laiko-I's Fig.1 or capillary 4 in Laiko-II's Fig.1 downstream from both the matrix-based ion source 3/4/5 and the ionization region (region between Laiko-I's 3/4/5, capillary 2, and gas nozzle 7) for receiving the analyte ions produced and discharged from the ion source ~~*[to]*~~ ***in*** Laiko-I's ionization region between 3/4/5, capillary 2, and gas nozzle, as is inherent in Danell's and specifically recited by Laiko-I on pg.653/Col.2/ll.10-15 and by Laiko-II on pg.5249/Col.2/ll.11-16.

However, Danell's as complemented by Laiko-I and/or Laiko-II makes use of a heating coil and does not use a conduit for conducting hot gas from a (heated) gas

source to heat the ions introduced into the capillary inlet 2 of Laiko-I or capillary inlet 4 of Laiko-II.

Heating a gas or ions in a capillary/tube using a conduit having the form of coaxial heat exchanger is conventional and well known in the art, as rendered obvious by Wilson Jr. in Col.6/ll.37-68. Heat exchange between coaxial conduits may be accomplished from liquid to liquid, gas to liquid and vice versa, as well as from gas to gas, as recited by Wilson Jr. in the Abstract/ll.5-7 and in Col.4/line 53.

In combination with Danell's performance-enhanced ion source as complemented by Laiko-I and Laiko-II, Wilson's coaxial heat exchanger as shown in Fig.1 and Fig.2 comprises:

(c) a gas source inherent in Wilson's for providing a gas 17 shown in Fig.2;

(d) a conduit 30 shown in Fig.2, recited in Col.6/line 42 and Col.7/ll.17-19, for conducting gas from the gas source, which is not shown but inherent in Wilson's. The further limitation is no other than a conventional and well known practice of directing the heater fluid in conduit 30 in the opposite direction of the fluid to be heated in conduit 36, as recited in Col.7/ll.19-23, in order to enhance the heating effect, as disclosed by Wilson Jr. in the Abstract/ll.5-11. Further support for this Official Notice is provided by Buswell et al. (USPAT # 4,098,589) in Col.2/ll.47-50.

Danell's performance-enhanced ion source as complemented by Laiko-I and Laiko-II, modified by Wilson's coaxial heat exchange conduit, further comprises:

(e) a detector inherent in Danell's mass analyzer, as implicated in the "*detection limit*" recited in the *Conclusion* section, line 3, downstream from the capillary, for enhanced

detection of analyte ions received by Laiko-I's capillary 2 and Laiko-II's capillary 4, both being shown in Fig.1, whereby the performance enhancement is caused by heating the analyte ions in the capillary by means of Wilson-type coaxial heat exchanger, the latter being a modification of Danell's heating coil, as recited by Danell et al. in the *Conclusion* section, lines 1-4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Danell's heater coil with Wilson's conduit-type coaxial heat exchanger, since the latter is a conventional heat-exchange technique well known in the art.

22. Claim 22 reciting the gas source being heated is inherent in Wilson's, as recited in Col.6/ll.58-64.

23. Claim 1 broadly recites the limitations of claims 11 and 22 combined. Therefore, claim 1 is rejected along with the rejections of claims 11 and 22.

24. Claims 2, 4, 12 and 14 recite limitations regarding the use of MALDI and AP-MALDI ion sources which are rendered obvious by Danell, Laiko-I and Laiko-II, as is obvious from the title and specifically recited in the Introduction.

25. Claims 3 and 13 recite the use of FAB-type ion sources, which is well known in the art as being interchangeable with MALDI and AP-MALDI types for use with mass

analyzers/spectrometers. This Official Notice is supported by Busch et al. (USPAT # 5,208,458), as disclosed in Col.6/ll.23-27.

26. Regarding claims 5, 8, 15 and 18, the MALDI & AP-MALDI ion sources as used by Danell, Laiko-I and Laiko-II are known to operate at atmospheric pressures, as also recited in all three Prior Arts.

27. Regarding claims 7, 10, 17 and 20, the MALDI & AP-MALDI ion sources as used by Danell, Laiko-I and Laiko-II are also capable of operating at above atmospheric pressures, as generally known in the art.

28. Regarding claims 6, 9, 16 and 19, the MALDI & AP-MALDI ion sources as used by Danell, Laiko-I and Laiko-II are also known to operate at below atmospheric pressures, since laser desorption remains functional under vacuum conditions, as generally known in the art.

29. Regarding claim 26, Danell's analyte ions in the capillary are heated to 60-150 degree Celsius, as disclosed in line 5 of section *Methods and instrumentation*, thus covering the range specified in the claim.

30. Insofar as the Examiner can ascertain beyond the previous § 112 rejections, claims 36-38 and 52 are method claims directly related to claims 1, 11 and 22, which

have been previously rejected. Therefore, claims 36-38 and 52 would be allowed if claims 1, 11 and 22 had been allowed. Since claims 1, 11 and 22 have been rejected, claims 36-38 and 52 are also rejected by the same reasons over the same prior arts.

31. Insofar as the Examiner can ascertain beyond the previous § 112 rejections, claims 39 and 47 are apparatus claims reciting the same limitations as the previously rejected claims 1, 11 and 22. Therefore, claims 39 and 47 would be allowed if claims 1, 11 and 22 had been allowed. Since claims 1, 11 and 22 have been rejected, claims 39 and 47 are also rejected by the same reasons over the same prior arts.

32. Regarding claim 27, Wilson's heat exchanger gas consists of air, as disclosed in the Abstract/ll.5-9 and in Col.4/ll.53-55.

33. Regarding claim 28, Laiko-I's ionization region, located between Laiko-I's 3/4/5, capillary 2, and gas nozzle 7, as already identified previously, has an area of (0.7-1.6 mm^2), as recited by Laiko-I in the last line on pg.653/Col.1, times (1.55 mm – 0.5 mm) as recited in the 5th line on pg.653/Col.2, resulting in an approximate volume of between 1 mm^3 and 2.5 mm^3, thus covering the volume range claimed by Applicant.

34. Regarding claims 29-32, the air used in Wilson's coaxial heat exchanger comprises monatomic, diatomic, triatomic, as well as polyatomic molecules, as generally known in the art.

35. Regarding claim 21, Wilson's conduit heat exchanger is also a transport device, comprising pipes and/or tubes.

36. Regarding claims 23-25 and 54, in order to function as a modification of, or as a substitute for Danell's heating coil, it is conventional and also trivial to place Wilson's conduit heat exchanger adjacent (i.e., in physical contact) to the capillary to be heated, or the conduit to enclose at least a portion of Danell's capillary, thereby defining an annular space for conducting gas flow between Danell's capillary and Wilson's conduit. Reason and motivation for combining Danell's with Wilson's are here derived from the general knowledge in the art by virtue of common sense. To come to such an idea, one of ordinary skill in the art does not need auxiliary teaching from any prior art.

37. Regarding claim 33, the use of a coupling for joining together the different parts is a mere matter of design choice which is not critical for a proper functioning of the device. As such, the claim is not patentable.

38. Regarding claims 34 and 35, the limitation of a housing in which the coaxial heat exchanger is disposed, is rendered obvious by Wilson Jr. with the housing 20 shown in Fig.1 and Fig.2, as recited in Col.7/ll.1-7.

39. Regarding claims 40 and 48, a mass analyzer is used by Danell et al. as recited in the first line of the Abstract, as well as by Laiko-I and Laiko-II, as recited in the Title.

40. The limitations of claims 41-46 and 49-51 are completely covered by claims 1, 11, 36, 38, 39 and/or 47, either individually or in combination. Therefore, claims 41-46 and 49-51 would be allowable if claims 1, 11, 36, 38, 39 and/or 47 had been allowed, which is here obviously not the case.

Allowable Subject Matter

41. Claim 53 would be allowable if rewritten to (a) overcome the rejection(s) under 35 U.S.C. 112, second paragraph set forth in this Office action, (b) include all of the limitations of the base claim and any intervening claims, and (c) if the Applicant is able to provide hard evidence (e.g., mass spectra) obtained under the strict condition as claimed, i.e., that the MS performance is enhanced *solely by gas-to-gas contact, without coaxial heating*, e.g., as depicted in Fig.3, showing the capillary 12 being physically separated from the conduit 9, thus preventing any other form of heat exchange except by collisions between heated gas molecules and analyte ions.

In the event that such a proof cannot be provided, the Applicant is advised to drop-off and eliminate claim 53 altogether, for being based on non-existing or unreal evidence.

42. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 703 305 0149. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703 308 4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

bes
October 11, 2002

JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800